

GEORGIA INSTITUTE OF TECHNOLOGY
Engineering Experiment Station

PROJECT INITIATION

Date: July 25, 1968

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Contact Person: Mr. Harold G. Hale, Jr.
Director, State Technical Services Program
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Atlanta, Georgia 30303

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GEORGIA INSTITUTE OF TECHNOLOGY
Engineering Experiment Station

PROJECT TERMINATION

Date 2/26/70

PROJECT TITLE: **Program Planning-State Technical Services**

PROJECT NO: **B-347**

PROJECT DIRECTOR: **J. L. Lewis**

SPONSOR: **Regents, University System of Georgia, Office of Technical Services**

TERMINATION EFFECTIVE: December 31, 1969

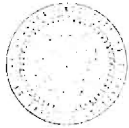
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GEORGIA INSTITUTE OF TECHNOLOGY

Industrial Development Division

1132 W. Peachtree Street
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January 29, 1970

Mr. Harold G. Hale, Jr., Director
Office of Technical Services
528 Hartford Building
100 Edgewood Avenue, N. E.
Atlanta, Georgia 30303

Dear Mr. Hale:

This letter and the attached materials represent the final report on Georgia Tech Project B-347 entitled "Program Planning: State Technical Services," authorized by your letter of June 17, 1968, to Dr. Edwin D. Harrison.

Three research-based documents which we feel will be of value in revising and updating Georgia's five-year plan and annual technical services programs have been developed under this planning grant. Copies of two of these documents are attached:

1. Technical Information and Service Needs of Georgia Industry -- an identification of the types of technical information and service that are needed by major industry groups and specific small industry groupings in Georgia, based on plant visits conducted by the Industrial Development Division's field service staff over a three-year period.

2. An Analysis of Georgia Industry -- a detailed analysis, based upon the most current data available, of the composition of Georgia industry, including the identification of major industry groups and specific small industry groupings that have the greatest impact on Georgia's economy.

The third document was completed during the early months of the grant period and was submitted to and accepted by your office. This phase of the project was concerned with an in-depth study of the residential construction industry in the United States in general and in Georgia in particular. The analysis was included in the publication A Revised Five-Year Plan for Georgia Technical Services Program, December 1968, pp. 148-151.

Please let me know if we may furnish you with any further information concerning this project or if you would like additional copies of this final report.

Sincerely,

Jerry L. Lewis
Project Director

Enclosures (2)



TECHNICAL INFORMATION AND SERVICE NEEDS OF GEORGIA INDUSTRY

An effective technical services program must be sensitive to the specific needs of the business and industrial firms that are to be served by that program. The Georgia Technical Services Program has been based on the existing understanding of these needs, as identified by interviews, surveys, and discussions with individuals who are to varying degrees familiar with the technical information interests and service needs of the groups that make up Georgia's business and industrial community.

The purpose of this section is to add to this understanding for future planning purposes by identifying the areas of interest and need of various industrial groups in Georgia as specified by those who are in the best position to know -- the recipients of the services of one of the broadest phases of the Georgia Technical Services Program.

For more than three years, the Industrial Development Division of Georgia Tech's Engineering Experiment Station has conducted a field service project under the Georgia Technical Services Program. This project involves personal visits to business and industrial firms throughout the state, the development of company profiles on those firms visited, and an identification of and response to the companies' immediate and continuing needs for technical information and service. Of the more than 1,800 firms visited by IDD field service personnel, some have had no immediate need for STS services, others have had problems which were outside the scope of the services available, and others have had very specialized needs which could be responded to under the project but which were not likely to recur. On the other hand, more than 20% of the firms visited indicated a continuing interest in and need for technical information or service in specific subject areas which were compatible with the capabilities and coverage of the STS program.

The interests and needs of the latter group provide the basis for the analysis which follows in this section. The group includes 373 business and industrial firms representing 26 major industry groups in every section of the state. Most of these firms are in manufacturing; a limited number are engaged in agriculture, mining, wholesale and retail trade, and services.

Obviously, the interests and needs of 373 industrial firms are not statistically representative of all Georgia industry, either in aggregate or by

industry group. However, since these firms are those that have indicated a continuing interest in certain technical subject areas after having been exposed to the STS program, it is likely that they significantly reflect the technical service needs of many similar companies that will be served by the STS program in the future.

Overall Needs of Georgia Industry

The areas of technical information interest or service need of Georgia business and industry are summarized in Table 1. The 1,255 areas of interest or need identified in personal visits with the 373 business and industrial firms have been grouped into 63 classifications for analysis purposes. Breakdown is by major industry group (two-digit Standard Industrial Classification number) with the exception of the "Other" category, which includes a limited number of service, wholesale, and retail firms.

Based on the STS field service experience reflected in this analysis, it can be firmly concluded that the most universal technical needs of Georgia business and industry are for information and service relating to two broad subject areas:

1. Product improvement, new uses for existing projects, and new product development.
2. New production techniques and new machinery development.

These represent a combination of the four most frequently mentioned areas of technical interest or service need and, in total, account for almost 37% of the total number of need areas identified by all of the companies visited. The need for technical information and service that will contribute to new or improved products or more advanced production operations was either the first or second most frequently mentioned area of interest of firms in 17 of the 18 manufacturing industry groups.

Other areas of interest which cut across industry lines (i.e., were identified at least once in more than half of the industry groups) are the following, in order of total frequency:

1. Uses and applications of new materials.
2. Availability of qualified workers or special skills.
3. Feasibility studies, market analyses, and marketing techniques.

Table 1

AREAS OF TECHNICAL INFORMATION INTEREST OR SERVICE NEEDS OF GEORGIA BUSINESS AND INDUSTRY

Technical Interest or Service Need	Food (1)	Textiles	Apparel	Wood	Furniture	Paper	Printing	Chemicals	Petroleum	Rubber	Stone (2)	Metals (3)	Metal Products	Machinery	Electrical	Transportation	Instruments	Misc. Mfg.	Other (4)	TOTAL
1. Product improvement or new uses for existing products	3	17	15	15	9	3	3	18	3	6	26	2	3	10	4	18	1	2	1	159
2. New production techniques	6	16	12	14	9	3	7	13	3	4	17	2	2	11	4	23	-	1	2	149
3. New machinery development	9	15	12	9	3	2	3	7	1	1	7	1	1	2	-	7	-	-	1	81
4. Development of new products	6	2	1	7	6	1	-	1	1	6	14	3	5	4	3	10	-	3	1	74
5. Uses and applications of new materials	-	7	1	7	11	-	1	4	1	4	5	-	2	5	-	7	6	4	1	66
6. Availability of qualified workers or special skills	3	1	11	10	4	-	3	2	1	1	6	1	-	6	-	1	-	1	1	52
7. Feasibility studies, market analyses, and marketing techniques	3	6	1	3	-	-	-	8	-	-	3	1	2	3	1	1	1	-	3	36
8. Packaging problems (including uses of various materials for packaging)	14	1	4	-	1	-	3	5	-	-	-	-	-	2	-	2	-	-	2	34
9. Sales development (increasing sales volume, market expansion and penetration, seasonal fluctuations)	2	3	1	4	3	-	1	1	1	2	5	2	-	3	1	3	-	-	-	32
10. Joining techniques (bonding, glueing, binding, sewing, fabrication)	-	3	2	6	-	-	1	1	1	1	1	-	1	7	-	3	-	-	1	28
11. Materials handling methods and equipment	9	3	2	3	-	-	-	3	-	-	2	-	1	2	-	3	-	-	-	28
12. Waste utilization and by-product development	-	1	3	14	1	-	1	1	-	-	1	2	-	1	-	-	-	-	-	25
13. General management (management systems, consultant needs)	1	2	7	1	2	1	1	3	-	1	1	1	-	1	-	-	-	-	1	23
14. Methods engineering (time and motion studies, job classification, work simplification, industry standards)	-	6	7	-	-	-	-	-	-	1	2	-	-	1	-	4	-	2	-	23

AREAS OF TECHNICAL INFORMATION INTEREST OR SERVICE NEEDS OF GEORGIA BUSINESS AND INDUSTRY

(Continued - 2)

Technical Interest or Service Need	Food (1)	Textiles	Apparel	Wood	Furniture	Paper	Printing	Chemicals	Petroleum	Rubber	Stone (2)	Metals (3)	Metal Products	Machinery	Electrical	Transportation	Instruments	Misc. Mfg.	Other (4)	TOTAL
15. New or improved sources of raw materials or components	1	-	-	4	1	-	-	2	1	-	7	1	1	1	-	1	-	1	1	22
16. Computers (technology, uses in business, software)	3	4	4	-	-	1	3	-	-	-	-	1	2	1	1	-	-	-	2	22
17. Plant or warehouse design and layout	5	-	2	-	-	-	1	4	-	1	1	-	-	1	-	4	-	2	1	22
18. Welding techniques	-	-	-	-	-	-	-	1	-	1	-	-	3	9	3	2	-	1	1	21
19. Inventory control	3	2	1	1	1	-	1	2	-	-	-	-	1	5	-	2	1	-	-	20
20. Employee communications, motivation, and incentives	1	2	4	1	-	-	2	1	-	1	2	-	1	3	-	-	-	-	-	18
21. Employee absenteeism and turnover	2	6	5	1	-	-	-	-	-	1	-	1	-	-	-	1	-	-	-	17
22. Financial sources (for expansion, inventory, working capital, accounts receivable)	-	-	-	5	4	-	-	3	-	-	-	-	-	1	-	1	-	2	-	16
23. Nuclear processes (irradiation, sterilization, radiation curing and preserving, atomic fuels, shielding)	5	3	-	2	-	-	-	1	-	2	2	-	-	-	-	-	-	-	-	15
24. Air or water pollution	1	1	2	1	-	-	-	8	-	-	-	1	-	-	-	-	-	-	1	15
25. Waste treatment and disposal (solid or liquid)	3	2	-	3	-	-	1	3	-	-	1	-	-	1	-	-	-	-	1	15
26. Employee training and development	-	3	4	-	-	-	1	1	-	-	-	1	-	2	1	-	-	-	-	13
27. Printing processes (lithography, engraving, typesetting)	-	1	-	-	-	-	12	-	-	-	-	-	-	-	-	-	-	-	-	13
28. Finishing techniques	-	6	1	1	-	-	-	-	-	-	1	-	1	-	-	-	2	-	-	12
29. Dyeing, coloring, staining, or painting techniques	-	7	-	-	-	-	-	1	-	-	1	-	-	1	-	-	2	-	-	12
30. Business procedures (profit analysis, accounting systems, forecasting)	2	-	1	2	-	1	1	-	-	-	-	-	-	5	-	-	-	-	-	12

AREAS OF TECHNICAL INFORMATION INTEREST OR SERVICE NEEDS OF GEORGIA BUSINESS AND INDUSTRY

(Continued - 3)

[illegible]

AREAS OF TECHNICAL INFORMATION INTEREST OR SERVICE NEEDS OF GEORGIA BUSINESS AND INDUSTRY

(Continued - 4)

Technical Interest or Service Need	Food (1)	Textiles	Apparel	Wood	Furniture	Paper	Printing	Chemicals	Petroleum	Rubber	Stone (2)	Metals (3)	Metal Products	Machinery	Electrical	Transportation	Instruments	Misc. Mfg.	Other (4)	TOTAL
46. Anodizing and electroplating	-	-	-	-	-	-	-	-	-	-	-	-	2	1	1	1	-	-	-	5
47. Permanent press technology	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5
48. Expansion of existing facilities	-	-	-	2	-	-	-	-	-	1	1	-	-	-	-	1	-	-	-	5
49. International markets	3	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	5
50. Personnel recruitment, selection, and placement techniques	-	-	2	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	4
51. Product testing	-	-	-	-	-	-	-	-	-	-	2	1	-	-	-	-	-	-	-	3
52. Curing, drying, or seasoning techniques	-	-	-	1	-	-	-	-	-	-	1	-	-	1	-	-	-	-	-	3
53. Chemical processes	-	1	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	3
54. Automation	-	-	1	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	3
55. Legal problems (labeling laws and restrictions, patent information)	-	-	-	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	3
56. Production management	1	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	3
57. Simulation studies	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1	-	-	-	-	2
58. Recovery techniques	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	2
59. Mergers, acquisitions, and new company formations	-	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	2
60. Industrial relations	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
61. Extruding and drawing techniques	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	1
62. Microwave drying and cooking	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
63. Sources of water	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
TOTALS	105	135	132	125	56	14	52	107	13	34	113	31	39	115	22	106	15	19	22	1,255

AREAS OF TECHNICAL INFORMATION INTEREST OR SERVICE NEEDS OF GEORGIA BUSINESS AND INDUSTRY

(Continued - 5)

Source: Based on analysis of company profiles developed on plant visits and personal interviews with 373 business and industrial firms representing 26 major industry groups.

- Notes:
- (1) Food category includes limited number of commercial farms.
 - (2) Stone category includes limited number of nonmetallic mining operations.
 - (3) Metals category includes limited number of metallic mining operations.
 - (4) Other category includes general contractors, sanitary services, wholesalers, retailers, and business services.

4. Sales development (increasing sales volume, market expansion and penetration, seasonal fluctuations).
5. Joining techniques (bonding, glueing, binding, sewing, fabrication).
6. General management (management systems, consultant needs).
7. New or improved sources of raw materials or components.
8. Computers (technology, uses in business, software).
9. Plant or warehouse design and layout.
10. Inventory control.
11. Employee communications, motivation, and incentives.

Many of the other areas of technical interest or service need which were mentioned most frequently in total are not common to Georgia industry in general, but are of primary importance to one or a limited number of industry groups. These are identified in the industry group analyses which follow.

Needs by Industry Group

Food and Kindred Products (SIC 20). Technical interests of food processors, the third largest manufacturing industry group in the state, differ from those of Georgia industry as a whole perhaps more than any other major industry group. The most critical need is for technical information and assistance in developing new packaging techniques and in utilizing new packaging materials. Other industry-wide areas of interest include new machinery development and materials handling methods and quipment.

Packaging problems are the primary concern of meat processors (including poultry dressing and packing), which make up the largest subgroup within Georgia's food industry. Widespread interest is also evident in the meat processing industry for technical information and service relating to the use of nuclear radiation in curing, preserving, and sterilization; the development of new products; and the development of new processing machinery.

Areas of technical interest or service need of other groups in the food processing industry are, in order of frequency of mention, the following:

Processors of dairy products -- distribution problems, materials handling equipment.

Processors of canned and preserved fruits, vegetables, and sea foods -- new production techniques, product improvement, materials handling equipment.

Processors of confectionery and related products -- environmental control, new packaging techniques, warehouse design and layout.

Textile Mill Products (SIC 22). Manufacturers of textile mill products, comprising the largest manufacturing industry group in the state, have technical information and service needs that closely parallel those of Georgia industry in general. Major technical emphasis in the textile industry is given to product improvement or new uses for existing products, new production techniques, and new machinery development.

Within the textile industry, two subgroups account for well over half of the industry's total number of firms and total employment: broad woven fabric mills (cotton) and manufacturers of tufted carpets and rugs. Needs for information and assistance in the cotton mills center around new production techniques and product improvement, finishing techniques, and training and motivating employees. Carpet mills report primary interest in technical information relating to uses and applications of new materials, new machinery and new production techniques, and dyeing and coloring techniques.

Areas of technical interest or service need of other groups in the textile industry are, in order of frequency of mention, the following:

Yarn and thread mills -- new machinery and new production techniques, market studies and analyses, computer applications.

Knitting mills -- new production techniques, product improvements, methods engineering.

Dyeing and finishing mills -- waste treatment.

Apparel and Other Finished Textile Products (SIC 23). The apparel industry in Georgia is concerned with the same basic areas of technological development as is the textile industry: product improvement or new uses for existing products, new production techniques (with heavy emphasis on permanent press technology), and new machinery development. In addition, representatives of the apparel industry expressed widespread interest in the less technical area of manpower availability.

Segments of the apparel industry differ little in their technical service needs, since classification of subgroups is by type of apparel produced, and basic manufacturing processes are essentially the same in all groups. Even in

those groups that differ most (rainwear, curtains, draperies, and specialty products), the needs and interests are similar, although there is greater emphasis on keeping informed of new technological developments, particularly new production techniques and product development approaches.

Lumber and Wood Products (SIC 24). Three major areas of technical interest predominate in the lumber and wood products industry in Georgia: processes that will improve the quality of finished products, new production techniques, and waste utilization and by-product development. Perhaps the latter is the most significant in terms of potential impact on the industry and specificity as a target area for a concentrated STS effort. Technical information and service that would assist the industry in general and sawmills and planing mills in particular to develop new and economical uses for bark, sawdust, shavings, and related waste would not only provide profitable diversification possibilities, but would also resolve existing problems of waste disposal and air pollution.

Areas of technical interest or service need of major groups within the lumber and wood products industry are, in order of frequency of mention, the following:

Sawmills and planing mills -- waste utilization and by-product development, new machinery development, availability of qualified labor.

Millwork, veneer, plywood, and prefabricated structural wood products -- product improvement, new machinery and new production techniques (with heavy emphasis on joining and binding techniques), uses and applications of new materials.

Wood preserving and miscellaneous wood products -- new production techniques, waste utilization and by-product development, new product development.

Furniture and Fixtures (SIC 25). Manufacturers of furniture and fixtures in Georgia have demonstrated a widespread interest in technical information relating to the uses and applications of new materials, particularly plastics. Other frequently mentioned areas of interest are product improvement, new production techniques, and the development of new products.

Segments of the furniture and fixtures industry differ in their technological needs more in degree than in kind. Manufacturers of upholstered furniture, for example, give greater emphasis to the need for information and service

relating to new materials, while producers of both metal and wood furniture and fixtures are more concerned with new production techniques and product development and improvement.

Paper and Allied Products (SIC 26). In the STS experience upon which this analysis of interest and needs is based, company profiles have not been developed on the large pulp and paper mills in Georgia (SIC 261, 262, and 263). Since all of these mills are of sufficient size to have in-house technical staffs, they can be better served by the ATAC special merit project than by the STS field service project. The areas of interest indicated below, therefore, do not apply to the entire paper and allied products industry, but only to manufacturers of converted paper and paperboard products (including paperboard containers and boxes) and to building paper and building board mills.

The technical needs of the surveyed section of the paper industry are not concentrated in a single area, but cover a variety of subjects. Interest was expressed by convertors and building paper mills in the following: new production techniques, product improvement, new machinery development, development of new products, general management, computers as a business tool, profit analysis, improving research and development staff and facilities, and simulation studies.

Printing, Publishing, and Allied Industries (SIC 27). Technical interest in the printing and publishing industry is highly concentrated in the general area of new production techniques and in the specific area of new developments in printing processes, including lithography, engraving, and typesetting. Other interests and needs are related to new production machinery, product improvement, availability of skilled workers, packaging problems, computer technology, and shipping and packing techniques.

Within the industry, technical information and service needs are basically the same in the two major subgroups --- newspapers and commercial printing --- which account for almost 75% of the employment and close to 90% of the number of firms in the industry in Georgia. Interest in shipping and packing techniques is peculiar to those firms in the industry that specialize in the manufacture of blankbooks and loose leaf binders.

Chemicals and Allied Products (SIC 28). Because of the heterogeneity of the chemical industry in Georgia, a consideration of the overall interest and

needs of the industry has little significance. Following are the primary areas of technical interest of the major chemical industry subgroups in the state, listed in order of frequency of mention by firms within each subgroup:

Agricultural chemicals -- air and water pollution control, new production techniques, product improvement.

Industrial inorganic and organic chemicals -- uses and applications of new materials, packaging problems, new production techniques, welding and joining techniques, plant layout, materials handling methods and equipment.

Soap, detergents, and cleaning preparations, perfumes, cosmetics, and other toilet preparations -- market studies and analyses, waste treatment and water pollution, coating techniques, product improvement, new machinery.

Gum and wood chemicals -- new production techniques, product improvement, new uses of product, better raw materials sources.

Paints, varnishes, lacquers, enamels, and allied products -- product improvement, uses and applications of new materials, new production techniques, solid waste disposal.

Miscellaneous chemical products -- general management, market studies and analyses.

Drugs -- new production techniques, product improvement, development of R & D staff and facilities, packaging problems.

Petroleum Refining and Related Industries (SIC 29). The petroleum refining industry in Georgia is made up of a limited number of manufacturers of paving and roofing materials and miscellaneous products such as compounded oils and greases. Major areas of technical interest are new production techniques, product improvement, new uses of product, joining techniques, new products, new materials, better sources of raw materials, new machinery, and sales development.

Rubber and Miscellaneous Plastics Products (SIC 30). Technical interest in the rubber and miscellaneous plastics products industry is concentrated in product improvement, new product development, new production techniques, and uses and applications of new materials.

Areas of technical interest or service need of major groups within the industry are, in order of frequency, the following:

Miscellaneous plastics products -- development of new products from plastics or nonferrous metals, new production techniques, product improvement, new uses of existing products, sales development.

Rubber footwear -- uses and applications of new materials, management systems, plant layout, time and motion studies.

Tires and inner tubes -- new plastics and fiberglass products, expansion of facilities.

Stone, Clay, Glass, and Concrete Products (SIC 32). Like the chemical industry, the stone, clay, glass, and concrete products industry in Georgia is made up of a variety of industrial subgroups that differ widely in products manufactured and in production processes. While some problems and needs are common to the industry as a whole, most are peculiar to particular segments of the industry. Following are the primary areas of technical interest or service need of the major subgroups, listed in order of frequency of mention by firms within each subgroup:

Glass products made of purchased glass -- improved sources of raw materials, new machinery development, mergers and acquisitions.

Hydraulic cement -- development of new products.

Structural clay products -- new production techniques, product improvement, new product development, uses and applications of new materials.

Pottery and related products -- materials handling methods and equipment.

Concrete, gypsum, and plaster products -- development of new products, new production techniques, product improvement.

Abrasive, asbestos, and miscellaneous nonmetallic mineral products (including processing of kaolin) -- new uses of product, new production techniques, product improvement, improved sources of raw materials.

Processors of cut stone and stone products represent another major segment of the industry. Included in this segment is the highly concentrated granite industry in the Elberton area, one of the three largest granite centers in the United States. Although this group is not included in the tabulation (Table 1) upon which this analysis is based, STS field service contact has been made with the association that represents approximately 50 processors of granite monuments

and building stone in the Elberton area. The following areas of technical interest or service need have been identified.

1. New methods and techniques in granite processing (reducing granite size, breaking down granite into constituent minerals, cutting, drilling, sawing, carving, polishing, waterproofing, cleaning, sandblasting, quarrying).
2. New uses for bulk or processed granite or granite waste.
3. Materials handling methods and equipment.
4. Cost accounting involving unit costs on nonstandard units.
5. Developments affecting demand for cemetery memorials and granite building materials.

Primary Metal Industries (SIC 33). Although the primary metal industries in Georgia are relatively small in terms of total employment, many of the individual firms have indicated an interest in STS technical information and assistance. Following are the primary areas of interest of the various segments of the industry in Georgia, listed in order of frequency of mention by firms within each segment:

Blast furnaces, steel works, and rolling and finishing mills -- new product development, availability of technical personnel, coating techniques, new machinery development, market expansion and penetration.

Iron and steel foundries -- waste utilization and by-product development, cutting and forming techniques, machining techniques, air pollution.

Nonferrous foundries -- product testing, forming techniques, development of new products.

Miscellaneous primary metal products -- new production techniques, product improvement.

Mining iron ores (SIC 101) -- recovery techniques, original sources of raw materials.

Fabricated Metal Products (SIC 34). New developments in metalworking techniques and the development of new products are areas of widespread interest in the fabricated metal products industry in Georgia. Based on STS contacts with fabricators of metal cans, cutlery, hand tools, general hardware, heating and plumbing fixtures, structural metal products, and metal stampings and with firms

providing coating, engraving, and allied services, the following areas of technical interest or service need have been identified.

1. New developments in fabricating processes (welding, joining, molding and forming, extruding, and coating techniques).
2. New product development.
3. Research and development relating to product improvement and new uses for existing products.
4. New automated machinery.
5. New developments in anodizing and electroplating processes.
6. Uses and applications of new materials.
7. Equipment maintenance.

Nonelectrical Machinery (SIC 35). Manufacturers of nonelectrical machinery in Georgia have indicated interest in a broader range of technical subject areas than any other industry group in the state, with special emphasis on the general areas of new production techniques and product improvement and the specific area of new developments in welding techniques. Areas of technical interest or service need of major groups within the nonelectrical machinery industry are, in order of frequency of mention, the following:

Farm machinery and equipment -- welding and other joining techniques; cutting, shearing, and machining techniques; inventory control; new production techniques; product development and improvement; cost and production control.

Construction, mining, and materials handling machinery and equipment -- development of new products, joining and separating techniques.

Metalworking machinery and equipment -- welding, casting, and machining techniques; new production techniques; product improvement; quality control systems; plant layout; methods engineering.

Special industrial machinery -- welding and joining techniques, product improvement, patent information, new machinery, anodizing and electroplating, ultrasonic cleaning, uses and applications of new materials, development of R&D facilities, business procedures and management systems, international market information.

General industrial machinery and equipment -- new production techniques, product improvement, market studies and analyses.

Service industry machines -- training and motivating employees, new production techniques, transportation problems and information.

Miscellaneous nonelectrical machinery -- welding, joining, separating, and machining techniques; packaging problems; uses and applications of new materials; solid waste disposal; cost and production control.

Electrical Machinery, Equipment, and Supplies (SIC 36). Many of the major firms in the electrical machinery, equipment, and supplies industry in Georgia are branches of national companies and are of sufficient size to maintain substantial technical staffs. Others, however, have expressed an interest in and need for STS services. Areas of technical interest of the surveyed subgroups in this industry are listed below in order of frequency of mention:

Electrical transmission and distribution equipment -- new developments in welding techniques, new production techniques, product improvement, simulation studies, anodizing and electroplating, computers as a business tool.

Electrical industrial apparatus -- new product development.

Household appliances -- new product development, sales development.

Electric lighting and wiring equipment -- new production techniques, product improvement, transportation problems.

Communication equipment -- new uses of products, new production techniques.

Electronic components and accessories -- new production techniques, product improvement, development of new products, market studies and analyses.

Transportation Equipment (SIC 37). In terms of total employment, the transportation equipment industry in Georgia is dominated by one major aircraft firm and several assembly plants of leading automobile manufacturers. These establishments have limited need for normal STS services. Georgia's transportation equipment industry also includes one of the fastest growing industrial subgroups in the state -- the manufacture of mobile homes. A significant amount of STS field service experience has been concentrated in this segment of the industry. Areas of primary technical interest of this and other subgroups within the transportation equipment industry are, in order of frequency of mention, the following:

Miscellaneous transportation equipment (primarily mobile homes) -- new production techniques, product improvement, new machinery development, joining and coating techniques, uses and applications of new materials, plant layout, new products, transportation problems, sources of finance, competitive trends, materials handling methods and equipment.

Motor vehicle and motor vehicle equipment -- new production techniques, welding and joining techniques, methods engineering, packaging problems, cost and production control.

Aircraft and parts -- research and development, inventory control (including numerical categorizing).

Ship and boat building and repairing -- development of new products, new production techniques, product improvement, uses and applications of new materials (particularly fiberglass).

Railroad equipment --- welding, joining, and separating techniques; product improvement; materials handling methods and equipment; time and motion studies; equipment maintenance.

Professional, Scientific, and Controlling Instruments; Photographic and Optical Goods; Watches and Clocks (SIC 38). STS field service experience with firms in this diverse but relatively small industry in Georgia has been limited to establishments engaged in manufacturing surgical, medical, and dental instruments and supplies and companies producing ophthalmic goods. Firms in both subgroups expressed a strong interest in developments affecting the use and applications of new materials, particularly plastics and both ferrous and nonferrous metals. Manufacturers of ophthalmic goods also indicated a need for technical information relating to new developments in finishing and coloring techniques and assistance in developing methods of inventory, cost, and production control.

Miscellaneous Manufacturing Industries (SIC 39). Following are the primary areas of technical interest or service need of two subgroups in the miscellaneous manufacturing industries classification with which the STS field service staff has had personal contact:

Toys, amusement, sporting, and athletic goods -- development of new products, uses and applications of new materials (particularly plastics and fiberglass), product improvement, sources of finance, improved sources of component parts.

Miscellaneous (brooms and brushes, signs and advertising displays) -- uses and applications of new materials, warehouse design and layout, time and motion studies, welding techniques, molding and forming techniques.

Other Industries. Following are the primary areas of technical interest or service need of nonmanufacturing industries with which the STS field service staff has had personal contact:

Construction other than building construction (SIC 16) -- new construction techniques, product improvement, market studies and analyses.

Sanitary services (SIC 495) -- welding techniques, new products, market studies and analyses.

Wholesale trade (SIC 50) -- packaging problems, computer technology, uses and applications of new materials, general management, warehouse design and layout, germ and bacteria control.

Lumber and other building materials dealers (SIC 521) -- sources of supply, market studies.

Miscellaneous business services (SIC 739) -- joining techniques.

AN ANALYSIS OF GEORGIA INDUSTRY

Introduction

An understanding of the current composition of Georgia industry is essential to the effective planning of specific programs of technical information and service for individual firms and industry groups within the state. It is the purpose of this section, therefore, to provide a detailed analysis of Georgia's manufacturing industry -- primarily in tabular form for easy reference and understanding -- based on the most current data available.

The selection of a source of information on a state's industrial composition that is both current and in sufficient detail to be meaningful presents the first problem in analyzing manufacturing data. The quinquennial censuses of manufactures conducted by the Bureau of the Census, U.S. Department of Commerce, provide the most comprehensive and most detailed data available on manufacturing operations in a city, county, state, region, or the nation as a whole. Unfortunately, the time lag between each census and the publication of detailed data is such that the timeliness of the information when it does become available is impaired. For example, preliminary detailed data from the most recent census, conducted in 1967, will not be available in published form until sometime in 1970.

Annual surveys of manufactures, conducted between census years, also suffer from the time-lag problem (e.g., the most recent published survey data are for 1966). In addition, the annual surveys, based on statistical sampling techniques rather than a census of the universe, are less comprehensive than the censuses and provide less detailed data (e.g., breakdowns by three-digit rather than four-digit SIC codes).

For the purposes of this analysis, it was found that the most acceptable source of information on Georgia in terms of recency and degree of detail was the 1969 Georgia Manufacturing Directory, compiled and published by the Georgia Department of Industry and Trade, covering a survey conducted in 1968 of more than 5,000 manufacturers in the state. Although less comprehensive in coverage than the census of manufactures, the directory has the advantage of being both reasonably current and immediately available. Even when the census becomes available within the next year, its data will be a year older than the directory data.

In analyzing the information in the Georgia Manufacturing Directory, it was necessary to refine the data in order to arrive at meaningful employment totals for the various four-digit subgroups within each major industry group. Each individual manufacturer in the directory is listed under each of the four-digit classifications that correspond with the various operations and products of the company, and the total employment for the company is repeated in the total employment of each of the classifications in which it is listed. In order to eliminate this distortion, it was necessary to identify the major activity of each establishment, to eliminate duplicate listings covering sub-activities, and to recompute totals for the number of establishments and employment in each four-digit classification.

Impact of Industry Groups

Major industry groups in Georgia are listed in order of total employment in Table 1. Also shown are the number of establishments in each industry group and the average employment size of establishments in each industry.

Georgia's industrial complex is dominated by industry groups that are generally considered to be labor intensive and not highly technological. Manufacturers of textile mill products provide considerably more employment than any other major industry group in the state. Textiles, along with apparel and food products, account for more than half of Georgia's total manufacturing employment. It was found in a 1965 survey by the National Science Foundation that these three industries spend relatively less nationwide on research and development as a percentage of net sales than any other industry groups.

Of those industries that devote an above-average proportion of funds to R&D activities, only one is significantly represented in Georgia in terms of total employment. Manufacturers of transportation equipment comprise the fourth largest employing industry in the state, with an employment total of slightly less than 46,000. More than 70% of these workers, however, are employed by one aircraft manufacturer and four plants where motor vehicles and passenger car bodies are assembled, all located in the Atlanta area.

The total economic impact of manufacturing industries in the state can be measured not only by total number of jobs provided, but also by total payrolls generated and total value added by manufacture. These impact factors are illustrated in Table 2, where the major industry groups in Georgia are listed

Table 1
NUMBER AND SIZE OF
MANUFACTURING ESTABLISHMENTS IN GEORGIA
BY MAJOR INDUSTRY GROUPS
(1968)

SIC No.	Major Industry Group	No. of Establish- ments	Total Employ- ment	Average Size
22	Textile Mill Products	429	114,766	268
23	Apparel and Other Finished Textile Prod- ucts	430	71,108	165
20	Food and Kindred Products	970	54,178	56
37	Transportation Equipment	142	45,857	323
26	Paper and Allied Products	129	25,380	197
32	Stone, Clay, Glass, and Concrete Prod- ucts	435	21,311	49
24	Lumber and Wood Products, except Furni- ture	430	17,537	41
34	Fabricated Metal Products	393	17,048	43
35	Machinery, except Electrical	314	15,031	48
28	Chemicals and Allied Products	357	14,903	42
27	Printing, Publishing, and Allied Indus- tries	523	12,321	24
25	Furniture and Fixtures	269	11,483	43
36	Electrical Machinery, Equipment, and Supplies	78	11,216	144
33	Primary Metal Industries	64	7,570	118
30	Rubber and Miscellaneous Plastics Prod- ucts	102	6,953	68
39	Miscellaneous Manufacturing Industries	146	5,572	38
31	Leather and Leather Products	27	4,843	179
38	Professional, Scientific, and Controlling Instruments; Photographic and Optical Goods; Watches and Clocks	36	2,539	71
19	Ordnance and Accessories	2	2,029	1,015
29	Petroleum Refining and Related Industries	44	1,567	36
21	Tobacco Manufactures	2	605	303
	Total	5,322	463,817	87

Source: Developed from 1969 Georgia Manufacturing Directory, Georgia Department of Industry and Trade, December 1968. Data modified by classifying each establishment according to its major activity.

in order of total impact. The employment index in Table 2 is based on 1968 employment; the payroll index is based on 1968 employment and the 1966 payroll per employee; the value added index is based on 1968 employment and 1966 value added per employee. The impact index is an unweighted average of employment, payroll, and value added indices. Although this measure of economic impact is somewhat unsophisticated, it nevertheless provides a useful guide in considering the total economic impact of the various major industry groups in the state.

From Table 2 it is evident that manufacturers of textile mill products exert a much greater economic impact on the state of Georgia than any other industry group. The total economic impact of the apparel industry is somewhat diminished when payrolls and value added are considered; this is also true of the lumber and wood products industry and, to a lesser degree, the stone, clay, glass, and concrete products industry. The more technical industries -- transportation equipment, chemical and allied products, and electrical machinery -- move up significantly in the ranking when factors other than total employment are considered.

Of more importance than broad industry groups in planning STS activities is an identification of more homogeneous industrial subgroups in Georgia that are of sufficient size to have a significant impact on the state's economy. The 30 major types of manufacturing activities in Georgia are ranked by total employment in Table 3. This listing is modified in Table 4 by the ranking of the 30 major types of manufacturing as determined by total employment, payrolls, and value added. The Table 4 listing also differs somewhat in that subgroups are slightly broader (three-digit rather than four), since acceptably current data on payrolls and value added are not available for four-digit industry groupings.

From Table 3, a number of industry groups can be identified which -- because of similarity of operations, number of establishments, and employment impact on the state's economy -- might be considered for industry-wide service projects under the State Technical Services Program. Groups of 10 or more establishments include broad woven cotton mills, tufted carpets and rugs, apparel plants (most of which have similar operations although products may differ), yarn mills, poultry processing, paperboard mills, sawmills and planing mills, bakery products, wood household furniture, newspapers, soft drinks, woven carpets and rugs, mobile homes, cut stone and stone products, kaolin and other clays, meat packers, animal and poultry feed, fabric finishers, and synthetic fabric mills.

Table 2

IMPACT OF MAJOR MANUFACTURING INDUSTRIES IN GEORGIA,
BASED ON EMPLOYMENT, PAYROLLS, AND VALUE ADDED
(1968)

SIC No.	Major Industry Group	Total			IMPACT INDEX ^{4/}
		Employment Index ^{1/}	Payroll Index ^{2/}	Value Added Index ^{3/}	
22	Textile Mill Products	115	102	106	108
37	Transportation Equipment	46	74	86	69
20	Food and Kindred Products	54	49	67	57
23	Apparel and Other Finished Textile Products	71	47	42	53
26	Paper and Allied Products	25	34	52	37
28	Chemicals and Allied Products	15	18	36	23
32	Stone, Clay, Glass, and Con- crete Products	21	20	22	21
34	Fabricated Metal Products	17	18	17	17
35	Machinery, except Electrical	15	18	18	17
36	Electrical Machinery, Equip- ment, and Supplies	11	13	16	13
27	Printing, Publishing, and Allied Industries	12	14	13	13
24	Lumber and Wood Products, except Furniture	18	10	10	13
25	Furniture and Fixtures	11	10	9	10
33	Primary Metal Industries	8	9	10	9
30	Rubber and Miscellaneous Plastics Products	7	6	10	8
39	Miscellaneous Manufacturing Industries	6	5	6	6
31	Leather and Leather Products	5	3	3	4
29	Petroleum Refining and Re- lated Industries	2	2	4	3

1/ 100 = 100,000 employees

2/ 100 = \$500,000,000

3/ 100 = \$1,000,000,000

4/ Impact Index = Average of employment, payroll, and value added indices

Sources: Developed from analysis, modification, and extrapolation of data from 1969 Georgia Manufacturing Directory, Georgia Department of Industry and Trade, December 1968, and Annual Survey of Manufactures 1966, U. S. Department of Commerce, Bureau of the Census, December 1968.

Table 3
30 MAJOR TYPES OF MANUFACTURING ACTIVITIES IN GEORGIA,
RANKED BY TOTAL EMPLOYMENT
(1968)

Rank	SIC No.	Type of Operation or Product Group	No. of Establish- ments	Total Employ- ment	Average Size
1	2211	Broad woven fabric mills, cotton	87	44,028	506
2	3721	Aircraft	4	23,921	5,980
3	2272	Tufted carpets and rugs	130	17,490	135
4	2327	Men's, youths' and boys' separate trousers	57	13,702	240
5	2321	Men's, youths' and boys' shirts, collars, and nightwear	40	12,982	319
6	2281	Yarn spinning mills: cotton, man- made fibers, and silk	31	11,038	356
7	2015	Poultry and small game dressing and packing	63	10,430	166
8	2631	Paperboard mills	11	9,964	906
9	3711	Motor vehicles	3	9,420	3,140
10	2421	Sawmills and planing mills, general	226	8,303	37
11	2311	Men's, youths' and boys' suits, coats, and overcoats	26	6,772	260
12	2328	Men's, youths' and boys' work clothing	33	5,807	176
13	2051	Bread and other bakery products	88	5,415	62
14	2511	Wood household furniture, except up- holstered	143	5,088	36
15	2342	Corsets and allied garments	11	4,890	445
16	2711	Newspapers: publishing, publishing and printing	179	4,809	27
17	2283	Yarn mills, wool, including carpet and rug yarn	13	4,726	363
18	2086	Bottled and canned soft drinks and carbonated water	111	4,620	42
19	2339	Women's, misses' and juniors' outer- wear, NEC	38	4,558	119
20	2296	Tire cord and fabric	5	4,521	904
21	2254	Knit underwear mills	9	4,508	501
22	2271	Woven carpets and rugs	17	4,419	260
23	3791	Trailer coaches, mobile homes	55	4,412	80
24	2341	Women's, misses', children's and infants' underwear and nightwear	21	4,121	196
25	3281	Cut stone and stone products	85	3,904	45
26	3295	Minerals and earths, ground or other- wise treated	33	3,866	117
27	2011	Meat packing plants	88	3,810	43
28	2042	Prepared feeds for animals and fowls	217	3,689	17
29	2261	Broad woven fabric finishers, cotton	12	3,508	292
30	2221	Broad woven fabric mills, man-made fiber and silk	24	3,409	142

Source: Developed from 1969 Georgia Manufacturing Directory, Georgia Department of Industry and Trade, December 1968. Data modified by classifying each establishment according to its major activity.

Table 4

30 MAJOR TYPES OF MANUFACTURING ACTIVITIES IN GEORGIA,
RANKED BY IMPACT OF TOTAL EMPLOYMENT, PAYROLLS, AND VALUE ADDED

Rank	SIC No.	Type of Operation or Product Group	Total			IMPACT INDEX ^{4/}
			Employment Index ^{1/}	Payroll Index ^{2/}	Value Added Index ^{3/}	
1	221	Broad woven fabric mills, cotton	88	101	93	94
2	372	Aircraft and parts	48	96	68	71
3	371	Motor vehicles and motor vehicle equipment	31	59	102	64
4	227	Floor covering mills	44	51	80	59
5	232	Men's, youths', and boys' furnishings, work clothing, and allied garments	70	54	43	56
6	263	Paperboard mills	20	38	81	46
7	228	Yarn and thread mills	39	41	39	40
8	201	Meat products, including poultry	32	33	32	32
9	344	Fabricated structural metal products	20	28	24	24
10	205	Bakery products	17	22	31	23
11	251	Household furniture	20	21	20	20
12	208	Beverages	11	14	27	17
13	361	Electric transmission and distribution equipment	11	18	23	17
14	234	Women's, misses', children's, and infants' undergarments	18	16	17	17
15	242	Sawmills and planing mills	19	14	13	15
16	264	Converted paper and paper- board products, except containers and boxes	12	16	17	15
17	265	Paperboard containers and boxes	11	17	17	15
18	327	Concrete, gypsum, and plaster products	12	15	16	15
19	225	Knitting mills	18	15	10	14
20	229	Miscellaneous textile goods, including tire cord and fabric	13	15	14	14
21	231	Men's, youths', and boys' suits, coats, and over- coats	14	16	12	14
22	233	Women's, misses', and juniors' outerwear	16	13	12	14
23	202	Dairy products	10	13	16	13

30 MAJOR TYPES OF MANUFACTURING ACTIVITIES IN GEORGIA,
RANKED BY IMPACT OF TOTAL EMPLOYMENT, PAYROLLS, AND VALUE ADDED
(continued)

Rank	SIC No.	Type of Operation or Product Group	Total			IMPACT INDEX ^{4/}
			Employment Index ^{1/}	Payroll Index ^{2/}	Value Added Index ^{3/}	
24	209	Miscellaneous food preparations and kindred products, including potato chips, peanut butter and snack items	10	11	18	13
25	329	Abrasive, asbestos, and miscellaneous non-metallic mineral products, including kaolin	10	13	16	13
26	204	Grain mill products	8	11	18	12
27	271	Newspapers: publishing, publishing and printing	10	13	14	12
28	203	Canned and preserved fruits, vegetables, and sea foods	14	10	12	12
29	239	Miscellaneous fabricated textile products, including draperies and bedspreads	12	11	13	12
30	379	Miscellaneous transportation equipment, including mobile homes	9	12	12	11

1/ 100 = 50,000 employees

2/ 100 = \$200,000,000

3/ 100 = \$400,000,000

4/ Impact Index = Average of employment, payroll, and value added indices

Sources: Developed from analysis, modification, and extrapolation of data from 1969 Georgia Manufacturing Directory, Georgia Department of Industry and Trade, December 1968, and Annual Survey of Manufactures 1966, U. S. Department of Commerce, Bureau of the Census, December 1968.

When total impact of employment, payroll, and value added is considered (see Table 4), several other industrial subgroups may be added: fabricated structural metal products, electric transmission and distribution equipment, converted paper and paperboard products, paperboard containers and boxes, concrete products, dairy products, miscellaneous food preparations (potato chips, peanut butter, etc.), canned and preserved foods, and draperies and bedspreads.

Composition of Major Industry Groups

The remaining portions of this section are devoted to tabular presentations showing the number of establishments, total employment, and average size of four-digit subgroups comprising each manufacturing industry represented in Georgia. (See Tables 5 through 25.) These tables are designed to accomplish two principal purposes in contributing to the planning of current and future State Technical Services Programs in Georgia:

1. Since they list in descending order of total employment the subgroups in each major manufacturing industry, they provide an instant analysis of both the diversification and the concentration of industry types within each of the state's manufacturing industries.

2. Since the listing under each major manufacturing industry includes all four-digit subgroups that were in operation in Georgia in 1968 (341 four-digit listings in 21 two-digit categories), the tables facilitate the identification of manufacturing subgroups (in addition to those previously mentioned) that might be served as individual units under the Georgia Technical Services Program.

Table 5
NUMBER, SIZE, AND TYPES OF
GEORGIA ESTABLISHMENTS ENGAGED PRIMARILY IN THE MANUFACTURE OF
ORDNANCE AND ACCESSORIES
(1968)

<u>SIC No.</u>	<u>Product Group</u>	<u>No. of Establish- ments</u>	<u>Total Employ- ment</u>	<u>Average Size</u>
1961	Small arms ammunition	1	2,027	2,027
1929	Ammunition, except for small arms, NEC	1	2	2
	TOTAL ORDNANCE AND ACCESSORIES (SIC 19)	2	2,029	1,015

Source: Developed from 1969 Georgia Manufacturing Directory, Georgia Department of Industry and Trade, December 1969. Data modified by classifying each establishment according to its major activity.

Table 6
NUMBER, SIZE, AND TYPES OF
GEORGIA ESTABLISHMENTS ENGAGED PRIMARILY IN THE MANUFACTURE OF
FOOD AND KINDRED PRODUCTS
(1968)

<u>SIC No.</u>	<u>Product Group</u>	<u>No. of Establish- ments</u>	<u>Total Employ- ment</u>	<u>Average Size</u>
2015	Poultry and small game dressing and packing	63	10,430	166
2051	Bread and other bakery products	88	5,415	62
2086	Bottled and canned soft drinks and carbonated water	111	4,620	42
2011	Meat packing plants	88	3,810	43
2042	Prepared feeds for animals and fowls	217	3,689	17
2026	Fluid milk	49	3,289	67
2052	Cookies and crackers	9	2,889	321
2036	Fresh or frozen packaged fish and sea foods	20	2,636	132
2071	Candy and other confectionery products	22	2,614	119
2099	Potato chips, peanut butter, snack items, and other food preparations, NEC	31	2,608	84
2033	Canned fruits, vegetables, preserves, jams, and jellies	20	2,588	129
2013	Sausages and other prepared meat products	83	1,751	21
2037	Frozen fruits, fruit juices, vegetables, and specialties	8	957	120
2024	Ice cream and frozen desserts	14	906	65
2087	Flavoring extracts and flavoring sirups, NEC	8	868	108
2097	Manufactured ice	55	666	12
2062	Cane sugar refining	1	638	638
2022	Cheese, natural and processed	2	597	299
2082	Malt liquors	2	580	290
2035	Pickled fruits and vegetables, sauces, seasonings, dressings	10	533	53
2096	Shortening, table oils, margarine, etc.	5	504	101
2091	Cottonseed oil mills	9	493	54
2041	Flour and other grain mill products	27	406	15
2094	Animal and marine fats and oils	10	258	26
2095	Roasted coffee	5	100	20
2093	Vegetable oil mills	2	97	49
2092	Soybean oil mills	1	59	59
2084	Wines, brandy, and brandy spirits	1	51	51
2085	Distilled, rectified, and blended liquors	1	42	42
2034	Dried and dehydrated fruits and vegetables	2	35	18
2031	Canned and cured fish and sea foods	1	18	18
2032	Condensed and evaporated milk	1	10	10

FOOD AND KINDRED PRODUCTS (continued)

<u>SIC</u> <u>No.</u>	<u>Product Group</u>	<u>No. of</u> <u>Establish-</u> <u>ments</u>	<u>Total</u> <u>Employ-</u> <u>ment</u>	<u>Average</u> <u>Size</u>
2073	Chewing gum	1	10	10
2045	Blended and prepared flour.	2	8	4
2021	Creamery butter	1	3	3
TOTAL FOOD AND KINDRED PRODUCTS (SIC 20)		970	54,178	56

Source: Developed from 1969 Georgia Manufacturing Directory, Georgia Department of Industry and Trade, December 1968. Data modified by classifying each establishment according to its major activity.

Table 7
NUMBER, SIZE, AND TYPES OF
GEORGIA ESTABLISHMENTS ENGAGED PRIMARILY IN THE PROCESSING OF
TOBACCO AND TOBACCO PRODUCTS
(1968)

<u>SIC No.</u>	<u>Product Group</u>	<u>No. of Establish- ments</u>	<u>Total Employ- ment</u>	<u>Average Size</u>
2121	Cigars	1	600	600
2141	Tobacco stemming and redrying	1	5	5
	TOTAL TOBACCO MANUFACTURES (SIC 21)	2	605	303

Source: Developed from 1969 Georgia Manufacturing Directory, Georgia Department of Industry and Trade, December 1968. Data modified by classifying each establishment according to its major activity.

Table 8
NUMBER, SIZE, AND TYPES OF
GEORGIA ESTABLISHMENTS ENGAGED PRIMARILY IN THE MANUFACTURE OF
TEXTILE MILL PRODUCTS
(1968)

<u>SIC No.</u>	<u>Product Group</u>	<u>No. of Establish- ments</u>	<u>Total Employ- ment</u>	<u>Average Size</u>
2221	Broad woven fabric mills, cotton	87	44,028	506
2272	Tufted carpets and rugs	130	17,490	135
2281	Yarn spinning mills: cotton, man-made fibers and silk	31	11,038	356
2283	Yarn mills, wool, including carpet and rug yarn	13	4,726	363
2296	Tire cord and fabric	5	4,521	904
2254	Knit underwear mills	9	4,508	501
2271	Woven carpets and rugs	17	4,419	260
2261	Finishers of broad woven fabrics of cotton	12	3,508	292
2221	Broad woven fabric mills, man-made fiber and silk	24	3,409	142
2252	Hosiery, except women's full-length and knee-length hosiery	18	3,378	187
2231	Broad woven fabric mills, wool	6	3,309	551
2284	Thread mills	7	3,092	442
2241	Narrow fabrics and other smallwares mills	10	2,059	206
2269	Finishers of textiles, NEC	4	1,343	336
2282	Yarn throwing, twisting, and winding mills	6	832	139
2298	Cordage and twine	8	624	78
2251	Women's full-length and knee-length hosiery	6	579	96
2294	Processed waste and recovered fibers and flock	8	510	64
2291	Felt goods, except woven felts and hats	2	359	180
2253	Knit outerwear mills	6	332	55
2262	Finishers of broad woven fabrics of man- made fiber and silk	2	210	105
2293	Paddings and upholstery filling	7	203	29
2279	Carpets and rugs, NEC	4	133	33
2256	Knit fabric mills	2	78	39
2295	Artificial leather, oilcloth, and other impregnated fabrics	3	62	21
2299	Textile goods, NEC	1	10	10
2259	Knitting mills, NEC	1	6	6
TOTAL TEXTILE MILL PRODUCTS (SIC 22)		429	114,766	268

Source: Developed from 1969 Georgia Manufacturing Directory, Georgia Department of Industry and Trade, December 1968. Data modified by classifying each establishment according to its major activity.

Table 9
NUMBER, SIZE, AND TYPES OF
GEORGIA ESTABLISHMENTS ENGAGED PRIMARILY IN THE MANUFACTURE OF
APPAREL AND OTHER FINISHED TEXTILE PRODUCTS
(1968)

SIC No.	Product Group	No. of Establish- ments	Total Employ- ment	Average Size
2327	Men's, youths' and boys' separate trousers	57	13,702	240
2321	Men's, youths' and boys' shirts, collars, and nightwear	40	12,782	319
2311	Men's, youths' and boys' suits, coats and overcoats	26	6,772	260
2328	Men's, youths' and boys' work clothing	33	5,807	176
2342	Corsets and allied garments	11	4,890	445
2339	Women's, misses' and juniors' outerwear, NEC	38	4,558	119
2341	Women's, misses', children's and infants' underwear and nightwear	21	4,121	196
2399	Fabricated textile products, NEC	30	1,977	66
2329	Men's, youths' and boys' clothing, NEC	9	1,834	204
2335	Women's, misses' and juniors' dresses	18	1,684	93
2392	Housefurnishings, except curtains and draperies	32	1,618	50
2369	Girls', children's, and infants' outerwear, NEC	11	1,528	138
2381	Dress and work gloves, except knit and all- leather	4	1,199	300
2391	Curtains and draperies	19	1,166	61
2331	Women's, misses' and juniors' blouses, waists and shirts	6	1,004	167
2337	Women's, misses' and juniors' suits, skirts, and coats	6	963	160
2361	Girls', children's and infants' dresses, blouses, waists, and shirts	6	909	152
2385	Raincoats and other waterproof outer garments	4	895	223
2384	Robes and dressing gowns	6	832	139
2389	Apparel and accessories, NEC	5	663	132
2322	Men's, youths' and boys' underwear	3	606	202
2393	Textile bags	13	509	39
2394	Canvas and related products	12	329	27
2396	Automotive trimmings, apparel findings, and related products	7	212	30
2387	Apparel belts	3	192	64
2352	Hats and caps, except millinery	4	118	30
2397	Schiffli machine embroideries	2	110	55
2351	Millinery	1	75	75
2323	Men's, youths' and boys' neckwear	2	35	18
2395	Pleating, decorative and novelty stitching, and tucking	<u>1</u>	<u>18</u>	<u>18</u>
	TOTAL APPAREL AND OTHER FINISHED TEXTILES (SIC 23)	430	71,108	165

Source: Developed from 1969 Georgia Manufacturing Directory, Georgia Department of Industry and Trade, December 1968. Data modified by classifying each establishment according to its major activity.

Table 10
NUMBER, SIZE, AND TYPES OF
GEORGIA ESTABLISHMENTS ENGAGED PRIMARILY IN THE MANUFACTURE OF
LUMBER AND WOOD PRODUCTS, EXCEPT FURNITURE
(1968)

<u>SIC No.</u>	<u>Product Group</u>	<u>No. of Establish- ments</u>	<u>Total Employ- ment</u>	<u>Average Size</u>
2421	Sawmills and planing mills, general	226	8,303	37
2442	Wirebound boxes and crates	10	1,771	177
2431	Millwork	51	1,639	32
2432	Veneer and plywood	18	1,327	74
2426	Hardwood dimension and flooring mills	17	1,157	68
2491	Wood preserving	22	875	39
2433	Prefabricated wooden buildings and structural members	16	716	44
2499	Pallets, frames, handles, seats, and other wood products, NEC	29	599	21
2411	Logging camps and logging contractors	26	579	22
2441	Nailed and lock corner wooden boxes and shook	9	285	31
2443	Veneer and plywood containers, except boxes and crates	3	179	60
2429	Special product saw mills, NEC	3	107	36
TOTAL LUMBER AND WOOD PRODUCTS, EXCEPT FURNITURE (SIC 24)		430	17,537	41

Source: Developed from 1969 Georgia Manufacturing Directory, Georgia Department of Industry and Trade, December 1968. Data modified by classifying each establishment according to its major activity.

Table 11
NUMBER, SIZE, AND TYPES OF
GEORGIA ESTABLISHMENTS ENGAGED PRIMARILY IN THE MANUFACTURE OF
FURNITURE AND FIXTURES
(1968)

<u>SIC No.</u>	<u>Product Group</u>	<u>No. of Establish- ments</u>	<u>Total Employ- ment</u>	<u>Average Size</u>
2511	Wood household furniture, except upholstered	143	5,088	36
2512	Wood household furniture, upholstered	20	2,133	106
2514	Metal household furniture	6	1,688	281
2515	Mattresses and bedsprings	42	1,281	30
2541	Wood partitions, shelving, lockers, and office and store fixtures	23	382	16
2522	Metal office furniture	3	351	117
2542	Metal partitions, shelving, lockers, and office and store fixtures	7	214	30
2591	Venetian blinds and shades	19	167	9
2531	Public building and related furniture	4	131	33
2521	Wood office furniture	1	37	37
2599	Outdoor furniture	1	11	11
TOTAL FURNITURE AND FIXTURES (SIC 25)		269	11,483	43

Source: Developed from 1969 Georgia Manufacturing Directory, Georgia Department of Industry and Trade, December 1968. Data modified by classifying each establishment according to its major activity.

Table 12
NUMBER, SIZE, AND TYPES OF
GEORGIA ESTABLISHMENTS ENGAGED PRIMARILY IN THE MANUFACTURE OF
PAPER AND ALLIED PRODUCTS
(1968)

<u>SIC No.</u>	<u>Product Group</u>	<u>No. of Establish- ments</u>	<u>Total Employ- ment</u>	<u>Average Size</u>
2631	Paperboard mills	11	9,964	906
2649	Converted paper and paperboard products, NEC	16	3,301	206
2653	Corrugated and solid fiber boxes	20	2,625	131
2611	Pulp mills	4	1,741	435
2643	Bags, except textile bags	10	1,605	161
2654	Sanitary food containers	11	1,255	114
2621	Paper mills, except building paper mills	2	1,125	563
2661	Building paper and building board mills	1	1,030	1,030
2651	Folding paperboard boxes	10	894	89
2642	Envelopes	6	585	98
2655	Fiber cans, tubes, drums, and similar products	12	547	46
2652	Set-up paperboard boxes	6	214	35
2641	Paper coating and glazing	8	207	26
2646	Pressed and molded pulp goods	3	152	51
2645	Die cut paper and paperboard; and cardboard	8	133	16
2647	Sanitary paper products	1	2	2
TOTAL PAPER AND ALLIED PRODUCTS (SIC 26)		129	25,380	197

Source: Developed from 1969 Georgia Manufacturing Directory, Georgia Department of Industry and Trade, December 1968. Data modified by classifying each establishment according to its major activity.

Table 13
NUMBER, SIZE, AND TYPES OF
GEORGIA ESTABLISHMENTS ENGAGED PRIMARILY IN THE
PRINTING, PUBLISHING, AND ALLIED INDUSTRIES
(1968)

<u>SIC No.</u>	<u>Product Group</u>	<u>No. of Establish- ments</u>	<u>Total Employ- ment</u>	<u>Average Size</u>
2711	Newspapers: publishing, publishing and printing	179	4,809	27
2751	Commercial printing, except lithographic	198	2,802	14
2752	Commercial printing, lithographic	76	1,517	20
2732	Book printing	4	900	225
2782	Blankbooks, loose leaf binders and devices	10	553	55
2741	Miscellaneous publishing	6	418	69
2721	Periodicals: publishing, publishing and printing	16	327	20
2761	Manifold business forms	9	270	30
2789	Bookbinding and related work	6	214	35
2731	Books: publishing, publishing and printing	3	183	61
2791	Typesetting	5	171	34
2793	Photoengraving	6	115	19
2753	Engraving and plate printing	3	22	7
2794	Electrotyping and sterotyping	2	20	10
TOTAL PRINTING, PUBLISHING, AND ALLIED INDUSTRIES (SIC 27)		523	12,321	24

Source: Developed from 1969 Georgia Manufacturing Directory, Georgia Department of Industry and Trade, December 1968. Data modified by classifying each establishment according to its major activity.

Table 14
NUMBER, SIZE, AND TYPES OF
GEORGIA ESTABLISHMENTS ENGAGED PRIMARILY IN THE MANUFACTURE OF
CHEMICALS AND ALLIED PRODUCTS
(1968)

<u>SIC No.</u>	<u>Product Group</u>	<u>No. of Establish- ments</u>	<u>Total Employ- ment</u>	<u>Average Size</u>
2842	Specialty cleaning, polishing, and sanitation preparations	40	1,611	40
2871	Fertilizers	24	1,579	66
2861	Gum and wood chemicals	20	1,517	76
2851	Paints, varnishes, lacquers, enamels, and allied products	33	1,403	42
2872	Fertilizers, mixing only	78	1,396	18
2821	Plastics materials, synthetic resins, and nonvulcanizable elastomers	8	827	103
2823	Cellulosic man-made fibers	1	748	748
2819	Industrial inorganic chemicals, NEC	19	743	39
2813	Industrial gases	12	669	55
2841	Soap and other detergents, except specialty cleaners	9	625	69
2816	Inorganic pigments	3	583	194
2833	Medicinal chemicals and botanical products	2	443	222
2879	Agricultural pesticides and other agricultural chemicals, NEC	20	442	22
2834	Pharmaceutical preparations	19	388	20
2899	Intermediate chemical processing, water treating chemicals, and chemicals and chemical preparations, NEC	16	347	22
2891	Adhesives and gelatin	9	289	32
2812	Alkalies and chlorine	4	276	69
2818	Industrial organic chemicals, NEC	9	256	27
2893	Printing ink	15	210	14
2824	Synthetic organic fibers, except cellulosic	3	192	64
2844	Perfumes, cosmetics, and other toilet preparations	5	162	32
2843	Surface active agents, finishing agents, sulfonated oils and assistants	6	116	19
2815	Dyes, dye intermediates, organic pigments, and cyclic crudes	2	81	41
TOTAL CHEMICALS AND ALLIED PRODUCTS (SIC 28)		357	14,903	42

Source: Developed from 1969 Georgia Manufacturing Directory, Georgia Department of Industry and Trade, December 1968. Data modified by classifying each establishment according to its major activity.

Table 15
NUMBER, SIZE, AND TYPES OF
GEORGIA ESTABLISHMENTS ENGAGED PRIMARILY IN
PETROLEUM REFINING AND RELATED INDUSTRIES
(1968)

<u>SIC No.</u>	<u>Product Group</u>	<u>No. of Establish- ments</u>	<u>Total Employ- ment</u>	<u>Average Size</u>
2951	Paving mixtures and blocks	26	703	27
2952	Asphalt felts and coatings	7	566	81
2992	Lubricating oils and greases	9	275	31
2911	Petroleum refining	2	23	12
TOTAL PETROLEUM REFINING AND RELATED INDUSTRIES (SIC 29)		44	1,567	36

Source: Developed from 1969 Georgia Manufacturing Directory, Georgia Department of Industry and Trade, December 1968. Data modified by classifying each establishment according to its major activity.

Table 16
NUMBER, SIZE, AND TYPES OF
GEORGIA ESTABLISHMENTS ENGAGED PRIMARILY IN THE MANUFACTURE OF
RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS
(1968)

<u>SIC No.</u>	<u>Product Group</u>	<u>No. of Establish- ments</u>	<u>Total Employ- ment</u>	<u>Average Size</u>
3069	Rubber compounds, carpet backing, latex gloves, and other fabricated rubber products, NEC	35	2,074	59
3079	Plastic containers, film, insulation, pipe, and other miscellaneous plastics products	56	2,025	36
3011	Tires and inner tubes	8	1,479	185
3021	Rubber footwear	3	1,375	458
TOTAL RUBBER AND MISCELLANEOUS PLASTICS PRODUCTS (SIC 30)		102	6,953	68

Source: Developed from 1969 Georgia Manufacturing Directory, Georgia Department of Industry and Trade, December 1968. Data modified by classifying each establishment according to its major activity.

Table 17
NUMBER, SIZE, AND TYPES OF
GEORGIA ESTABLISHMENTS ENGAGED PRIMARILY IN THE MANUFACTURE OF
LEATHER AND LEATHER PRODUCTS
(1968)

<u>SIC</u> <u>No.</u>	<u>Product Group</u>	<u>No. of</u> <u>Establish-</u> <u>ments</u>	<u>Total</u> <u>Employ-</u> <u>ment</u>	<u>Average</u> <u>Size</u>
3141	Footwear, except house slippers and rubber footwear	10	3,289	329
3199	Saddles and other leather goods, NEC	6	638	106
3171	Women's handbags and purses	3	488	163
3142	House slippers	2	145	73
3161	Luggage	2	103	52
3151	Leather gloves and mittens	1	100	100
3121	Industrial leather belting and packing	3	80	27
TOTAL LEATHER AND LEATHER PRODUCTS (SIC 31)		27	4,843	179

Source: Developed from 1969 Georgia Manufacturing Directory, Georgia Department of Industry and Trade, December 1968. Data modified by classifying each establishment according to its major activity.

Table 18
NUMBER, SIZE, AND TYPES OF
GEORGIA ESTABLISHMENTS ENGAGED PRIMARILY IN THE MANUFACTURE OF
STONE, CLAY, GLASS, AND CONCRETE PRODUCTS
(1968)

SIC No.	Product Group	No. of Establish- ments	Total Employ- ment	Average Size
3281	Cut stone and stone products	85	3,904	45
3295	Minerals and earths, ground or otherwise treated	33	3,866	117
3272	Precast concrete products, concrete pipe, building panels, and other concrete products, NEC	100	2,343	23
3273	Ready-mixed concrete	97	2,014	21
3255	Clay refractories	6	1,851	308
3271	Concrete block and brick	51	1,600	31
3221	Glass containers	2	1,297	649
3251	Brick and structural clay tile	8	1,040	130
3259	Structural clay products, NEC	2	747	374
3275	Gypsum products	3	513	171
3241	Cement, hydraulic	5	405	81
3231	Glass products made of purchased glass	7	314	44
3292	Asbestos products	4	274	68
3293	Gaskets, packing, and asbestos insulations	5	222	44
3297	Nonclay refractories	4	194	48
3253	Ceramic wall and floor tile	3	175	58
3296	Mineral wool	3	159	53
3264	Porcelain electrical supplies	1	125	125
3274	Lime	3	98	32
3261	Vitreous china plumbing fixtures	1	90	90
3269	Flower pots, art pottery, and other pottery products, NEC	8	42	5
3299	Nonmetallic mineral products, NEC	3	22	7
3291	Abrasive products	1	16	16
TOTAL STONE, CLAY, GLASS AND CONCRETE PRODUCTS (SIC 32)		435	21,311	49

Source: Developed from 1969 Georgia Manufacturing Directory, Georgia Department of Industry and Trade, December 1968. Data modified by classifying each establishment according to its major activity.

Table 19
NUMBER, SIZE, AND TYPES OF
GEORGIA ESTABLISHMENTS ENGAGED PRIMARILY IN THE
PRIMARY METAL INDUSTRIES
(1968)

<u>SIC No.</u>	<u>Product Group</u>	<u>No. of Establish- ments</u>	<u>Total Employ- ment</u>	<u>Average Size</u>
3312	Blast furnaces, steel works, and rolling mills	4	1,759	439
3357	Drawing and insulating of nonferrous wire	3	1,678	559
3352	Rolling, drawing, and extruding of aluminum	5	1,569	313
3321	Gray iron foundries	17	1,361	80
3323	Steel foundries	3	287	96
3322	Malleable iron foundries	1	200	200
3361	Aluminum castings	10	176	18
3317	Steel pipe and tubes	2	130	65
3356	Rolling, drawing, and extruding of nonferrous metals, except copper and aluminum	4	111	27
3341	Secondary smelting and refining of nonferrous metals	3	75	25
3362	Brass, bronze, copper, copper base alloy castings	3	68	23
3351	Rolling, drawing, and extruding of copper	1	53	53
3315	Steel wire drawing and steel nails and spikes	2	48	24
3369	Nonferrous castings, NEC	2	24	12
3399	Primary metal products, NEC	3	18	6
3391	Iron and steel forgings	1	13	13
TOTAL PRIMARY METAL INDUSTRIES (SIC 33)		64	7,570	118

Source: Developed from 1969 Georgia Manufacturing Directory, Georgia Department of Industry and Trade, December 1968. Data modified by classifying each establishment according to its major activity.

Table 20
NUMBER, SIZE, AND TYPES OF
GEORGIA ESTABLISHMENTS ENGAGED PRIMARILY IN THE MANUFACTURE OF
FABRICATED METAL PRODUCTS
(1968)

<u>SIC No.</u>	<u>Product Group</u>	<u>No. of Establish- ments</u>	<u>Total Employ- ment</u>	<u>Average Size</u>
3444	Sheet metal work	121	2,397	20
3441	Fabricated structural steel	36	2,362	65
3442	Metal doors, sash, frames, molding, and trim	56	2,276	40
3461	Metal stampings	20	2,220	111
3443	Fabricated plate work	23	1,865	81
3411	Metal cans	6	1,125	187
3449	Steel buildings and miscellaneous metal work	17	699	41
3481	Miscellaneous fabricated wire products	11	581	52
3471	Electroplating, plating, polishing, anodizing and coloring	15	534	35
3433	Heating equipment, except electric	4	475	118
3499	Fabricated metal products, NEC	16	371	23
3446	Architectural and ornamental metal work	24	326	13
3498	Fabricated pipe and fabricated pipe fittings	5	255	51
3491	Metal shipping barrels, drums, kegs, and pails	7	255	36
3431	Enameled iron and metal sanitary ware	3	236	78
3451	Screw machine products	5	223	45
3432	Plumbing fixture fittings and trim (brass goods)	2	213	106
3494	Valves and pipe fittings, except brass goods	6	168	28
3429	Hardware, NEC	4	155	38
3425	Hand saws and saw blades	1	125	125
3479	Coating, engraving, and allied services, NEC	7	95	13
3423	Hand and edge tools, except machine tools and hand saws	2	58	29
3493	Steel springs	1	26	26
3452	Bolts, nuts, screws, rivets and washers	1	8	8
TOTAL FABRICATED METAL PRODUCTS (SIC 34)		393	17,048	43

Source: Developed from 1969 Georgia Manufacturing Directory, Georgia Department of Industry and Trade, December 1968. Data modified by classifying each establishment according to its major activity.

Table 21
NUMBER, SIZE, AND TYPES OF
GEORGIA ESTABLISHMENTS ENGAGED PRIMARILY IN THE MANUFACTURE OF
NONELECTRICAL MACHINERY
(1968)

SIC No.	Product Group	No. of Establish- ments	Total Employ- ment	Average Size
3522	Farm machinery and equipment	44	2,880	65
3552	Textile machinery	35	1,544	44
3599	Machine shops and miscellaneous machinery, except electrical	76	1,477	19
3585	Air conditioning equipment and commercial and industrial refrigeration machinery and equipment	8	1,168	146
3537	Industrial trucks, tractors, trailers, and stackers	12	1,134	94
3531	Construction machinery and equipment	7	884	126
3559	Special industry machinery, NEC	15	845	56
3551	Food products machinery	12	842	70
3544	Special dies and tools, die sets, jigs and fixtures	34	643	19
3589	Service industry machines, NEC	8	599	75
3542	Machine tools, metal forming types	5	460	92
3553	Woodworking machinery	7	415	59
3561	Pumps, air and gas compressors, and pump- ing equipment	9	411	45
3564	Blowers and exhaust and ventilation fans	5	274	54
3545	Machine tool accessories and measuring devices	2	252	126
3534	Elevators and moving stairways	2	250	125
3535	Conveyors and conveying equipment	4	196	49
3579	Office machines, NEC	2	116	58
3555	Printing trades machinery and equipment	4	111	27
3566	Mechanical power transmission equipment	2	101	50
3548	Metalworking machinery (except machine tools) and power driven hand tools	4	70	17
3569	General industrial machinery and equip- ment, NEC	3	65	21
3582	Commercial laundry, dry cleaning, and pressing machines	1	63	63
3519	Internal combustion engines, NEC	2	50	25
3536	Hoists, industrial cranes, and monorail systems	1	50	50
3554	Paper industries machinery	2	38	17
3573	Electronic computing equipment	1	31	31
3541	Machine tools, metal cutting types	2	30	15
3581	Automatic merchandising machines	1	19	19
3565	Industrial patterns	3	7	2
3586	Measuring and dispensing pumps	1	6	6
TOTAL MACHINERY, EXCEPT ELECTRICAL. (SIC 35)		314	15,031	48

Source: Developed from 1969 Georgia Manufacturing Directory, Georgia Department of Industry and Trade, December 1968. Data modified by classifying each establishment according to its major activity.

Table 22
NUMBER, SIZE, AND TYPES OF
GEORGIA ESTABLISHMENTS ENGAGED PRIMARILY IN THE MANUFACTURE OF
ELECTRICAL MACHINERY, EQUIPMENT, AND SUPPLIES
(1968)

<u>SIC No.</u>	<u>Product Group</u>	<u>No. of Establish- ments</u>	<u>Total Employ- ment</u>	<u>Average Size</u>
3612	Power, distribution, and specialty transformers	5	2,798	559.
3613	Switchgear and switchboard apparatus	12	2,565	213
3642	Lighting fixtures	10	1,216	122
3662	Radio and television transmitting, signaling, and detection equipment and apparatus	4	1,027	256
3621	Motors and generators	4	799	199
3694	Electrical equipment for internal com- bustion engines	10	645	65
3691	Storage batteries	6	600	100
3611	Electric measuring instruments and test equipment	2	317	158
3635	Household vacuum cleaners	1	300	300
3622	Industrial controls	3	270	90
3661	Telephone and telegraph apparatus	3	222	74
3644	Noncurrent-carrying wiring devices	2	153	76
3636	Sewing machines	2	112	56
3679	Electronic components and accessories, NEC	3	53	17
3672	Cathode ray picture tubes	3	43	14
3629	Electrical industrial apparatus, NEC	1	32	32
3623	Welding apparatus	1	16	16
3699	Electrical machinery, equipment, and sup- plies, NEC	1	15	15
3652	Phonograph records	1	13	13
3651	Radio and television receiving sets	1	10	10
3634	Electric housewares and fans	2	6	3
3631	Household cooking equipment	1	4	4
	TOTAL ELECTRICAL MACHINERY, EQUIPMENT, AND SUPPLIES (SIC 36)	78	11,216	144

Source: Developed from 1969 Georgia Manufacturing Directory, Georgia Department of Industry and Trade, December 1968. Data modified by classifying each establishment according to its major activity.

Table 23
NUMBER, SIZE, AND TYPES OF
GEORGIA ESTABLISHMENTS ENGAGED PRIMARILY IN THE MANUFACTURE OF
TRANSPORTATION EQUIPMENT
(1968)

<u>SIC No.</u>	<u>Product Group</u>	<u>No. of Establish- ments</u>	<u>Total Employ- ment</u>	<u>Average Size</u>
3721	Aircraft	4	23,921	5,980
3711	Motor vehicles	3	9,420	3,140
3791	Trailer coaches, including mobile homes	55	4,412	80
3714	Motor vehicle parts and accessories	19	2,700	142
3713	Truck and bus bodies	16	1,126	70
3712	Passenger car bodies	1	1,100	1,100
3715	Truck trailers	6	1,060	176
3742	Railroad and street cars	6	727	121
3732	Boat building and repairing	13	588	45
3729	Aircraft parts and auxiliary equip- ment, NEC	5	312	62
3799	Trailers and other transportation equipment, NEC	12	279	23
3731	Ship building and repairing	1	206	206
3751	Motorcycles, bicycles, and parts	1	6	6
TOTAL TRANSPORTATION EQUIPMENT (SIC 37)		142	45,857	323

Source: Developed from 1969 Georgia Manufacturing Directory, Georgia Department of Industry and Trade, December 1968. Data modified by classifying each establishment according to its major activity.

Table 24
NUMBER, SIZE, AND TYPES OF
GEORGIA ESTABLISHMENTS ENGAGED PRIMARILY IN THE MANUFACTURE OF
INSTRUMENTS, PHOTOGRAPHIC AND OPTICAL GOODS, AND WATCHES AND CLOCKS
(1968)

<u>SIC No.</u>	<u>Product Group</u>	<u>No. of Establish- ments</u>	<u>Total Employ- ment</u>	<u>Average Size</u>
3871	Watches, clocks, clockwork operated devices, and parts	2	1,019	509
3821	Mechanical measuring and controlling instruments, except automatic temperature controls	5	627	125
3842	Orthopedic, prosthetic, and surgical appliances and supplies	8	457	57
3851	Ophthalmic goods	5	105	21
3831	Optical instruments and lenses	3	95	31
3841	Surgical and medical instruments and apparatus	5	94	19
3861	Photographic equipment and supplies	2	74	37
3811	Engineering, laboratory, and scientific and research instruments and associated equipment	4	55	13
3822	Automatic temperature controls	1	8	8
3843	Dental equipment and supplies	1	5	5
TOTAL INSTRUMENTS, PHOTOGRAPHIC AND OPTICAL GOODS, AND WATCHES AND CLOCKS (SIC 38)		36	2,539	71

Source: Developed from 1969 Georgia Manufacturing Directory, Georgia Department of Industry and Trade, December 1968. Data modified by classifying each establishment according to its major activity.

Table 25
NUMBER, SIZE, AND TYPES OF
GEORGIA ESTABLISHMENTS ENGAGED PRIMARILY IN
MISCELLANEOUS MANUFACTURING INDUSTRIES
(1968)

<u>SIC No.</u>	<u>Product Group</u>	<u>No. of Establish- ments</u>	<u>Total Employ- ment</u>	<u>Average Size</u>
3951	Pens, pen points, fountain pens, ball point pens, mechanical pencils and parts	1	1,500	1,500
3949	Golf clubs, golf balls, golf carts, baseball bats, and other sporting and athletic goods, NEC	15	1,000	67
3964	Zipppers	2	728	364
3993	Signs and advertising displays	59	549	9
3994	Morticians' goods	18	482	26
3942	Dolls	3	383	128
3955	Carbon paper and inked ribbons	6	222	37
3991	Brooms and brushes	11	193	17
3952	Lead pencils, crayons, and artists' materials	2	176	88
3953	Marking devices	12	130	11
3999	Umbrellas, fire extinguishers, swim- ming pool equipment, and other manufacturing industries, NEC	6	73	12
3962	Feathers, plumes, and artificial flowers	1	43	43
3941	Games and toys, except dolls and children's vehicles	3	42	14
3961	Costume jewelry and costume novelties	3	26	8
3911	Jewelry, precious metal	4	25	6
TOTAL MISCELLANEOUS MANUFACTURING INDUSTRIES (SIC 39)		146	5,572	38

Source: Developed from 1969 Georgia Manufacturing Directory, Georgia Department of Industry and Trade, December 1968. Data modified by classifying each establishment according to its major activity.